## Pain on administration of recuronium

Rocuronium has been recently introduced into clinical practice to allow rapid onset muscle relaxation of an intermediate duration. In all the studies published, there has been little reference to the pain that occurs when rocuronium is administered to the awake patient [1]. In clinical use, even when patients are asleep and rocuronium is administered after the induction agent, hand withdrawal often occurs, suggesting pain on injection. In several studies, rocuronium has been shown to produce an increase in heart rate [2, 3] and sometimes an increase in arterial pressure [4]. The explanation of these reactions was thought to be a vagolytic or even a sympathomimetic effect. Perhaps the simpler explanation of these cardiovascular effects is that under steady state (light) general anaesthesia, the pain of injection of rocuronium (usually into a peripheral vein) can cause an increase in heart rate and even an increase in arterial pressure.

*Academisch Zeikenhuis, 6500 HB, Nijmegan* E.N. ROBERTSON

*References*

[1] MOORTHY SS, DIERDORF SF. Pain on injection of rocuronium bromide. *Anesthesia and Analgesia* 1995; **80:** 1067.
[2] BOOTH MG, MARSH B, BRYDEN FM, ROBERTSON EN, BAIRD WLM. A comparison of the pharmacodynamics of rocuronium and vecuronium during halothane anaesthesia. *Anaesthesia* 1992; **47:** 832–4.
[3] MCCOY EP, MADDENINI VR, ELLIOT P. MIRAKHUR RK, CARSON IW, COOPER RA. Haemodynamic effects of rocuronium during fentanyl anaesthesia: comparison with vecuronium. *Canadian Journal of Anaesthesia* 1993; **40:** 703–8.
[4] ROBERTSON EN, HULL JM, VERBEEK AM, BOOIJ LHDJ. A comparison of rocuronium and vecuronium: the pharmacodynamic, cardiovascular and intra-ocular effects. *European Journal of Anaesthesiology* 1994; **11** (Suppl. 9): 116–21.

## Calcium chloride; a reminder

We wish to remind anaesthetists of the danger of tissue necrosis from extravasation of calcium chloride.

A 63-year-old man received an infusion of 10% calcium chloride at 2 ml.h$^{-1}$ via a dedicated 18 gauge cannula on his right wrist. After 8 h the arm was noticed to be discoloured and the infusion stopped. Unfortunately a large area of skin necrosis and subcutaneous tissue loss developed extending from the site of the cannula to the antecubital fossa (Fig. 1).

It is known that calcium solutions are irritant and likely to cause local reactions including sloughing of the skin and necrosis [1, 2] and for this reason they should never be given by intramuscular or subcutaneous injection. In a series of 45 premature infants who received calcium gluconate infusions via a scalp vein the incidence of such complications was 8%. The report by Heckler and McCraw [3] who injected subcutaneous solutions of calcium into rats concluded that it was the concentration of free calcium that determined whether or not skin necrosis occurred, not pH or osmolarity, calcium chloride causing greater injury than gluconate as it is more highly dissociated. The report also concluded that clysis with normal saline and hyaluronidase (150 units.100 ml$^{-1}$) was successful in preventing full thickness skin loss when carried out up to 1 h following the initial injury and used in a volume up to ten times the injected volume of 10% calcium. They also noted that the injury with 10% calcium chloride involved both underlying skin, fascia and skeletal muscle and that early skin grafting was not successful.

When using calcium solutions care should be taken and consideration given to the use of central veins, more dilute solutions or less irritant salts such as calcium gluconate. Should extravasation occur then immediate attempts to use local clysis with normal saline and hyaluronidase should be attempted.

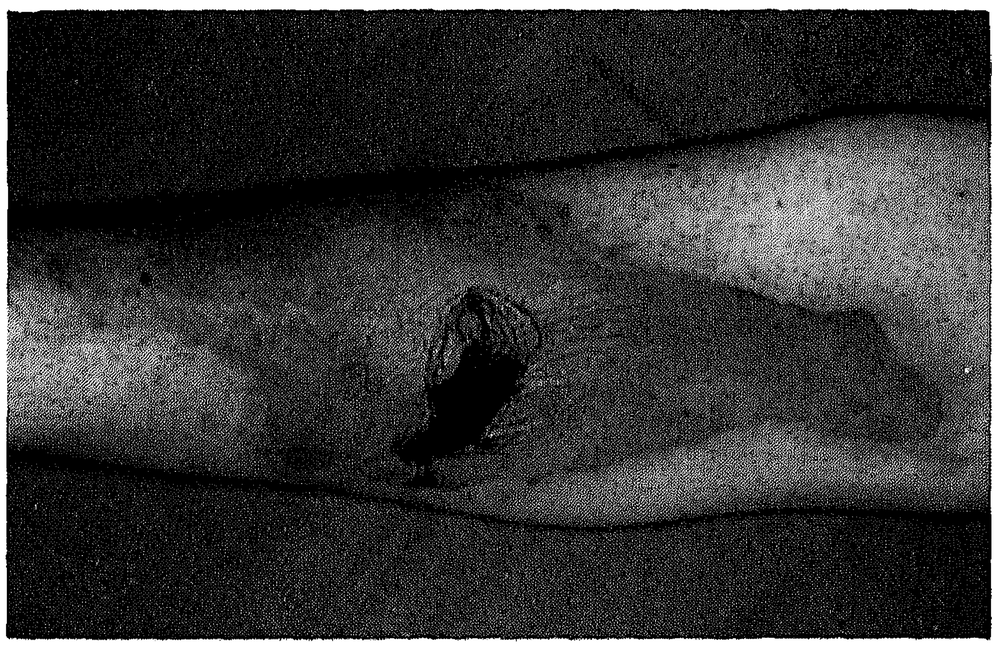

**Fig. 1.**

*St. James' Hospital, Leeds* P. SEMPLE
*Clinical Pharmacist, Killingbeck Hospital, Leeds* C. BOOTH

*References*

[1] AHFS Drug Information. American Hospital Formulary Services, 1992: 1498–501.
[2] *Martindale; The Extra Pharmacopoeia*. The Pharmaceutical Press, 1989; **29:** 1029–30.
[3] HECKLER FR, MCCRAW JB. Calcium related cutaneous necrosis. *Surgical Forum* 1976; **27:** 553–5.

## Electronic anaesthetic logbooks; standards for data entry

The Royal College of Anaesthetists requires its trainees to keep a logbook [1]. While most trainees will use a pen and paper system, electronic logbooks allow for rapid and sophisticated data analysis which produces reports on an individual level of experience and supervision. Many trainees have developed their own simple logbook databases for data collection with some data analysis. A number of computer enthusiasts within anaesthesia have developed sophisticated logbook databases with extensive reporting facilities. Many of these individuals converge at the biannual meetings of the Society for Computing and Technology in Anaesthesia (SCATA). It is reassuring to see